

October 31, 2008

Ms. Karlene Fine
Executive Director
North Dakota Industrial Commission
600 East Boulevard Avenue
Bismarck, ND 58505

Dear Ms. Fine:

Subject: EERC Plains CO₂ Reduction Partnership (PCOR) Phase II Deliverable D3 Quarterly
Technical Progress Report for the Period July 1 – September 30, 2008
Contract Nos. FY06-LV-143 and GO05-014; EERC Fund 9821

Enclosed is a hard copy of the Quarterly Technical Progress Report for the PCOR Partnership Program for Phase II. Also enclosed is a disk containing the Quarterly Technical Progress Report. An electronic version is also being sent to you via e-mail.

If you have any questions, please call me at (701) 777-5279 or e-mail me at esteadman@undeerc.org.

Sincerely,

Edward N. Steadman
PCOR Partnership Manager
EERC Senior Research Advisor

ENS/sah

Enclosures

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PLAINS CO₂ REDUCTION PARTNERSHIP PHASE II

Quarterly Technical Progress Report

(for the period July 1 – September 30, 2008)

Prepared for:

Karlene Fine

Industrial Commission of North Dakota
600 East Boulevard Avenue
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Contract Nos. FY06-LV-143 and GO05-014
EERC Fund 9821

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PLAINS CO₂ REDUCTION PARTNERSHIP PHASE II
Quarterly Technical Progress Report
July 1 – September 30, 2008

INTRODUCTION

The Plains CO₂ Reduction (PCOR) Partnership has been established as a U.S. Department of Energy (DOE) National Energy Technology Laboratory (NETL) Regional Carbon Sequestration Partnership (RCSP). The PCOR Partnership is managed by the Energy & Environmental Research Center (EERC) at the University of North Dakota (UND) in Grand Forks, North Dakota. The PCOR Partnership region includes all or part of nine states (Iowa, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Wisconsin, and Wyoming) and four Canadian provinces (Alberta, British Columbia, Manitoba, and Saskatchewan).

Phase II is a 4-year project, in two budget periods (BPs), that will run from October 1, 2005, to September 30, 2009. This progress report summarizes the activities for the reporting period (July 1 – September 30, 2008) for Phases II.

The activities for Phase II of the PCOR Partnership include four validation tests (Figure 1) along with regional characterization, regulatory and permitting activities, and outreach. Ten tasks have been developed; see Table 1 for the responsibility matrix.

Table 1. Phase II Responsibility Matrix

Phase II Task Description	Responsible Party
Task 1 – Project Management and Reporting	Ed Steadman
Task 2 – Field Validation Test in a Williston Basin Oil Field, North Dakota	Jim Sorensen
Task 3 – Field Validation Test at Zama, Alberta	Steve Smith
Task 4 – Field Validation Test of North Dakota Lignite	Lisa Botnen
Task 5 – Terrestrial Validation Test	Barry Botnen
Task 6 – Characterization of Regional Sequestration Opportunities	Wes Peck
Task 7 – Research Safety, Regulatory, and Permitting Issues	Lisa Botnen
Task 8 – Public Outreach and Education	Dan Daly
Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment	Melanie Jensen
Task 10 – Regional Partnership Program Integration	Ed Steadman



Figure 1. PCOR Partnership Phase II validation test sites.

SUMMARY OF SIGNIFICANT PHASE II ACCOMPLISHMENTS

Task 1 – Project Management and Reporting

Phase II of the PCOR Partnership grew from 76 partners in the reporting period April 1 – June 30, 2008, to 81 partners in the July 1 – September 30, 2008 reporting period. The latest partners include ALLETE; BNI Coal, Ltd.; Manitoba Geological Survey; Computer Modelling Group, Inc.; and Biorecro AB. Phase II members in good standing are automatically enrolled in Phase III for the first budget period (BP) that overlaps with the last 2 years of Phase II (October 1, 2007 – September 30, 2009). The membership, as of September 30, 2008, is listed in Table 2.

The deliverable entitled “D3: Task 1 – Quarterly Progress Report/Milestone Quarterly Report for Year 3 – Quarter 3” was submitted to DOE for approval on June 30, 2008.

Table 2. PCOR Partnership Membership, Phase II

U.S. Department of Energy National Energy Technology Laboratory	Great Northern Power Development, LP	North Dakota Industrial Commission
UND EERC	Great River Energy	Lignite Research, Development and Marketing Program
Abengoa Bioenergy New Technologies	Hess Corporation	North Dakota Industrial Commission
Air Products and Chemicals	Huntsman Corporation	Oil and Gas Research Council
Alberta Department of Energy	Interstate Oil and Gas Compact Commission	North Dakota Natural Resources Trust
Alberta Energy and Utilities Board	Iowa Department of Natural Resources	North Dakota Petroleum Council
Alberta Geological Survey	Lignite Energy Council	North Dakota State University
Alberta Geological Survey	Manitoba Geological Survey	Otter Tail Power Company
ALLETE	Marathon Oil Company	Petroleum Technology Transfer Council
Ameren Corporation	MEG Energy Corporation	Prairie Public Broadcasting
American Coalition for Clean Coal Electricity	Melzer Consulting	Pratt & Whitney Rocketdyne, Inc.
American Lignite Energy (ALE)	Minnesota Geological Survey – University of Minnesota	Ramgen Power Systems, Inc.
Apache Canada Ltd.	Minnesota Power	RPS Energy Canada Ltd. – APA Petroleum Engineering Inc.
Basin Electric Power Cooperative	Minnkota Power Cooperative, Inc.	Saskatchewan Industry and Resources
Biorecro AB	Missouri Department of Natural Resources	SaskPower
Blue Source, LLC	Missouri River Energy Services	Schlumberger
BNI Coal, Ltd.	Montana–Dakota Utilities Co.	Shell Canada Energy
British Columbia Ministry of Energy, Mines, and Petroleum Resources	Montana Department of Environmental Quality	Spectra Energy
Carbozyme, Inc.	National Commission on Energy Policy	Strategic West Energy Ltd.
Computer Modelling Group, Inc.	Natural Resources Canada	Suncor Energy Inc.
Dakota Gasification Company	Nexant, Inc.	TGS Geological Products and Services
Ducks Unlimited Canada	North American Coal Corporation	University of Alberta
Ducks Unlimited, Inc.	North Dakota Department of Commerce	U.S. Geological Survey Northern Prairie Wildlife Research Center
Eagle Operating, Inc.	Division of Community Services	Western Governors' Association
Eastern Iowa Community College District	North Dakota Department of Health	Westmoreland Coal Company
Enbridge Inc.	North Dakota Geological Survey	Weatherford Advanced Geotechnology
Encore Acquisition Company	North Dakota Industrial Commission	Wisconsin Department of Agriculture, Trade and Consumer Protection
Environment Canada	Department of Mineral Resources, Oil and Gas Division	Xcel Energy
Excelsior Energy Inc.		
Fischer Oil and Gas, Inc.		

Task 2 – Field Validation Test – Williston Basin Oil Field, North Dakota

Phase II – Task 2 continues to focus on evaluating the effectiveness of CO₂ sequestration in conjunction with enhanced oil recovery (EOR) operations in a deep carbonate reservoir in the Williston Basin. During this quarter, evaluation of oil fields in the Williston Basin that may be suitable candidates to host the Task 2 injection and monitoring, mitigation, and verification (MMV) activities continued. Efforts are focused on developing baseline characterization data for fields in the Cedar Creek Anticline area, the Billings Anticline–Dickinson area, along the Nesson Anticline, and the Northeast Flank. Specifically, efforts were focused on developing petrophysical models of the Rival oil field in the Northeast Flank area and a group of oil fields in the Dickinson area that are comprised of carbonate mud mounds. These oil fields have been determined to be potential host sites for the Phase II demonstration. Laboratory-based tests were also conducted. The laboratory tests focused on injecting CO₂ at reservoir conditions into core plugs and testing the geochemical and geomechanical properties of the core plugs before and after injection. These tests were initiated during the first quarter of 2008, and results were anticipated in the late summer of 2008. However, problems with equipment over the summer resulted in delays of the laboratory work, and final results are now expected to be available in December 2008.

Task 3 – Field Validation Test at Zama, Alberta

Injection of acid gas has continued during this reporting period. A cumulative total of 385 million cubic feet (approximately 20,000 tons) of gas has been injected, with an average composition of 80% CO₂ and 20% hydrogen sulfide (H₂S). This equates to approximately 16,000 tons of CO₂ sequestered throughout the 650-day operational period. Injection rates throughout this reporting period fluctuated because of operational maintenance shutdowns and reconfiguration of the production well. Following this work-over, a brief period of oil production was seen by the operator. Figure 2 illustrates the cumulative injection profile from inception through September 2008.

Task 4 – Field Validation Test of North Dakota Lignite

During this quarter, a formation water sample was submitted to the U.S. Environmental Protection Agency (EPA) in support of the aquifer exemption request. This is part of the underground injection control (UIC) application for CO₂ injection. Nitrogen fracture injection/fall-off tests (NFIT) were conducted on three of the wells to derive in situ aquifer parameters of the lignite. The results indicate an average initial reservoir pressure of $p_i = 340$ psia, which is significantly lower than the estimated hydrostatic pressure.

For the most part, well development is complete, and the wells are being readied for CO₂ injection and monitoring. Negotiations are complete with Praxair to supply and inject CO₂ at the site.

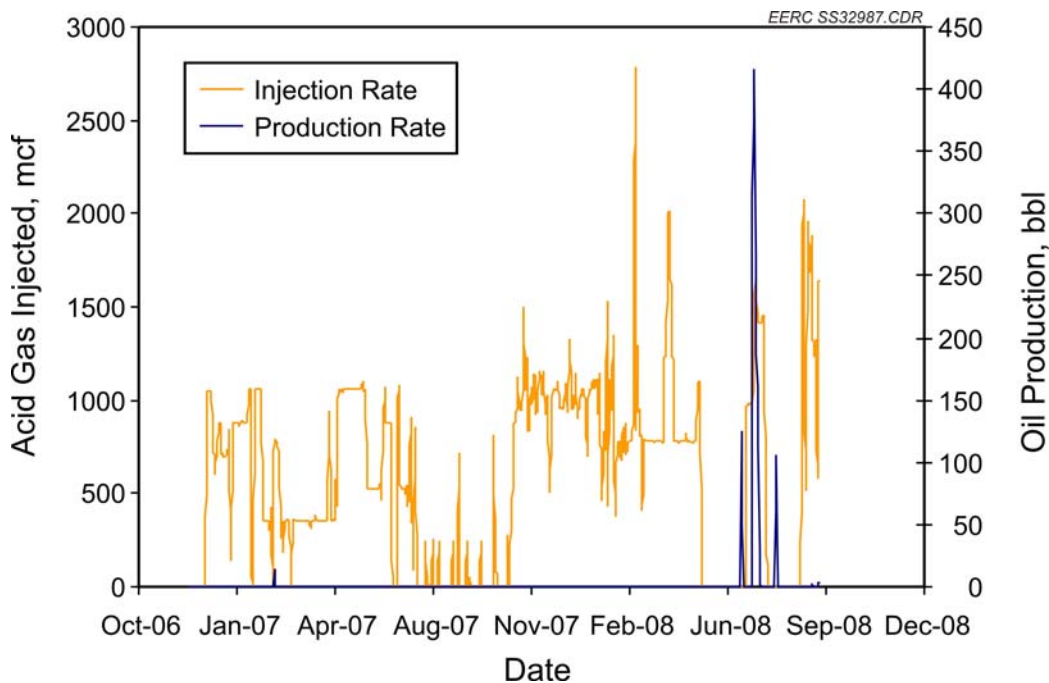


Figure 2. Zama "F" Pool acid gas injection profile.

Task 5 – Terrestrial Validation Test

Several accomplishments were made regarding our business process products for the terrestrial task during this reporting period:

- The geodatabase for the Oracle Ecoasset Carbon Module was tested by directly loading existing polygon-based carbon units and using distributed geodatabase workflows. Tabular relationships were built between the polygon feature class and form-side tables to ensure the attribute data accuracy. Geometry accuracy was ensured by building topological rules. The first phase of development of an ArcGIS Server Web-based mapping application took place during the last quarter which will be integrated into the Oracle application (Figure 3). Queries can now be made that allow the user to view the carbon unit boundaries associated with a project number or carbon transaction. The application has been successfully deployed and tested in a development environment.
- Modifications were made to the carbon offset Bill of Sale/Greenhouse Gas (GHG) Conveyance legal document to clarify transfer of ownership of both GHG rights as well as carbon credits generated on properties.

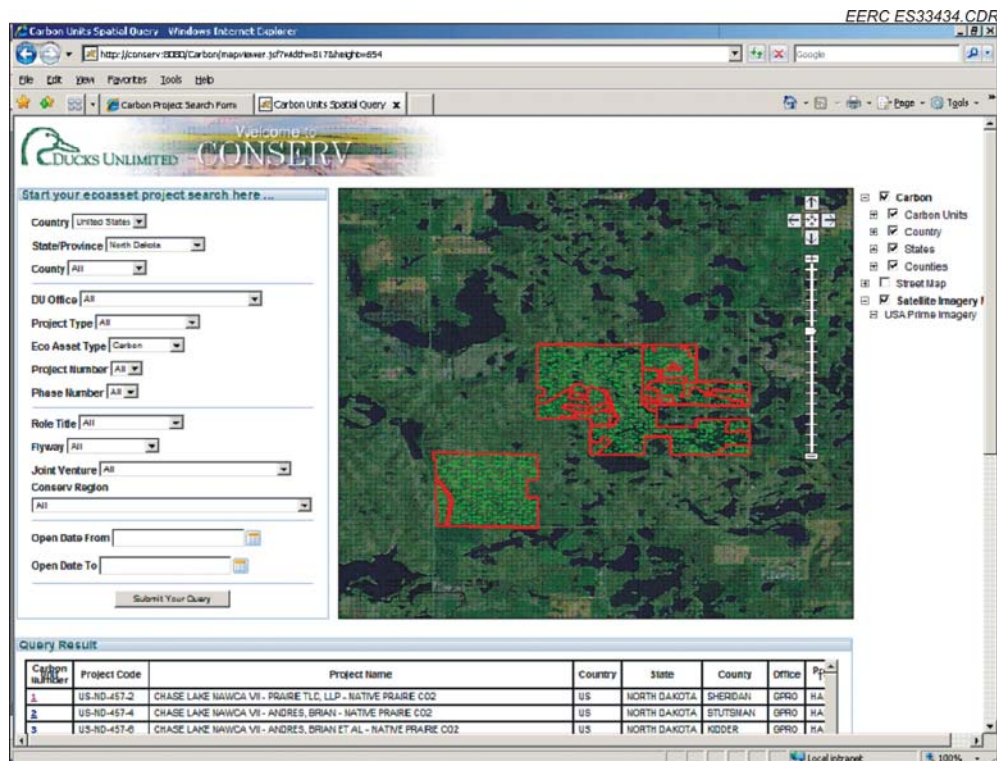


Figure 3. Carbon database module Web-mapping application.

- Approximately 130,000 tons of native grassland carbon offsets generated in the PCOR Partnership region by PCOR Partnership partners was sold to American International Group, Inc. (AIG) in September 2008. The legal instruments and database tools developed during Phase II of the PCOR Partnership grant were used to ensure a smooth transaction and efficient reporting.

Grassland sampling was completed in northeastern North Dakota study areas in Benson, Cavalier, Eddy, Nelson, Ramsey, and Towner Counties. A total of 278 soil samples were collected from 139 sampling sites representing 1390 acres. Sampling was also completed at sample sites located in northern Iowa and southern Minnesota. A total of 480 soil samples were collected from 240 sampling sites representing 2400 acres sampled. All samples were processed, and carbon analysis was completed for samples collected in northeastern Montana and northeastern North Dakota.

Task 6 – Characterization of Regional Sequestration Opportunities

Work in Task 6 during this reporting period included the initiation of a major remodel of the PCOR Partnership Decision Support System (DSS, © 2007 EERC Foundation).

Basic stratigraphic data collection was completed for reconnaissance-level evaluation of the Mississippian Mission Canyon Formation, the Ordovician Winnipeg Group, and the Cambrian Deadwood Formation in the Washburn region of North Dakota. These stratigraphic horizons represent the final saline sequestration zones that will be part of the overall Washburn area study. The Washburn study area focuses on zones of porosity/permeability amenable to CO₂ sequestration. The study uses a map-based approach coupled with Monte Carlo uncertainty analysis.

Iowa has completed the compilation, review, and creation of geographic information system (GIS) files for the Ordovician and Mississippian mapping unit isopach maps. This effort included reviewing key well cutting sets, cores, geophysical logs, and tests.

Task 7 – Research Safety, Regulatory, and Permitting Issues

During this reporting period, a formation water sample was submitted to EPA in support of the PCOR Partnership's request for an aquifer exemption for the lignite field validation test. Injection activities are on hold pending this approval from EPA.

Additionally, a thorough review of EPA's proposed rules for regulating geological sequestration under the UIC program was completed. A spreadsheet that compares and contrasts the EPA-proposed rules with World Resources Institute (WRI) Guidelines and Interstate Oil and Gas Compact Commission (IOGCC) model rules was developed, and a draft of this document was provided to interested PCOR Partnership members at the PCOR Partnership Annual Meeting. Draft comments on EPA's proposed rules have been developed and submitted to an ad hoc committee of PCOR Partnership members. As input from PCOR Partnership members is received, the comments continue to be refined.

Task 8 – Public Outreach and Education

During the reporting period, the documentary “Out of the Air – Into the Soil: Land Practices That Reduce Atmospheric Carbon Levels” was completed and broadcast; arrangements continued to obtain interviews and cover footage for the “Geologic Sequestration” documentary; planning continued for the final television documentary under this task; and activities were initiated for the PowerPoint update.

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

During the reporting period, a draft report providing a preliminary economic assessment of the most likely early regional sequestration opportunities in the PCOR Partnership was completed (submitted on July 31, 2008). The draft report (deliverable D44), “Phase II Best Practice Manual: Regional Sequestration Opportunities,” covers the following topics:

- An overview of PCOR Partnership regional sources.
- Matches between regional source types and appropriate capture technologies.
- Cost and power requirements for various levels of CO₂ capture at the PCOR Partnership region electricity-generating plants.
- Cost and power requirement for CO₂ capture at the PCOR Partnership region ethanol facilities.
- Cost and possible route for a regional CO₂ pipeline network.

Task 10 – Regional Partnership Program Integration

Participation in conference calls for the Outreach, GIS, Geologic, and Modeling Work Groups also continued. On March 3 and 4, 2009, the 4th Annual Southeast Regional Carbon Sequestration Partnership Stakeholders' Briefing is being held in College Park, Georgia. A representative from the PCOR Partnership is planning to attend this meeting to enhance relationships between the other RCSPs.

PHASE II PROGRESS OF WORK

Task 1 – Project Management and Reporting

Task 1 includes all project management and reporting activities. This reporting period focused on the following activities: 1) managing overall project activities, 2) informing stakeholders about DOE's RCSP Program and the PCOR Partnership, 3) adding new partners to the PCOR Partnership, and 4) discussing existing and potential demonstration activities with prospective Phase II participants. Work in Task 1 also included the following:

- The PCOR Partnership 2008 Annual Meeting was held September 16–18, 2008, in Maple Grove, Minnesota. We are currently constructing a link on the PCOR Partnership DSS that summarizes the meeting and posts the presentations from the meeting.

- The second edition (revised) of the PCOR Partnership Regional Atlas is complete and was distributed at the PCOR Partnership 2008 Annual Meeting. It is also being added to the PCOR Partnership DSS Web site.
- Prairie Public Broadcasting (PPB) premiered “Out of the Air – Into the Soil: Land Practices That Reduce Atmospheric Carbon Levels” on Friday, September 26, 2008, at 8:30 p.m. Central Daylight Time. The documentary was distributed at the PCOR Partnership 2008 Annual Meeting. It will also be added to the PCOR Partnership Web site as streaming video soon.
- We are currently reviewing the final draft document entitled “Monitoring, Verification, and Accounting (MVA) of CO₂ Stored in Deep Geologic Formations.” Comments are due October 3.

Task 2 – Field Validation Test – Williston Basin Oil Field, North Dakota

The goal of Task 2 is to conduct a field validation test in the Williston Basin oil field in northwestern North Dakota to evaluate the potential for geological sequestration of CO₂ in a deep carbonate reservoir for the dual purpose of CO₂ sequestration and EOR.

Throughout this reporting period, laboratory tests continued to examine the geochemical interactions between CO₂, saline water, and rocks. Rock examined included carbonate rocks that are representative of reservoir rocks being considered as potential target injection zones for the Williston Basin demonstration. Anhydrites and shales that may act as cap rocks have also been examined. Preliminary results indicate that some changes in mineral composition can and do occur. It is anticipated that a series of these tests, using a variety of rock types, will continue to be conducted over the summer and fall of 2008, with the primary purpose being the development of rate of reaction data that can be used to refine geochemical models.

Task 3 – Field Validation Test at Zama, Alberta

The goal of the field validation test in the Zama Field of Alberta is to evaluate the potential for geological sequestration of CO₂ as part of a gas stream that also includes high concentrations of H₂S acid gas being injected for the concurrent purposes of CO₂ sequestration, H₂S disposal, and EOR.

Recent activities have also focused on further characterization of the overall strength of the cap rock and the likelihood of failure. In July 2008, an in situ stress test was conducted on the Muskeg anhydrite formation that acts as the sealing formation for the Keg River reservoir. The test utilized Schlumberger’s Modular Formation Dynamics Tester wire line tool to inject approximately 5 liters of water into the formation to determine the maximum horizontal stress of the anhydrite. Three intervals were tested in the cap rock at pressures exceeding 5000 psi. This represents a pressure of approximately 3000 psi above the permitted injection pressure at the site. Preliminary results confirm that the cap rock is extremely competent as evidenced by the inability to fracture the first two anhydrite intervals tested. The third interval tested was a dolomite stringer (encased in anhydrite) within the cap rock that was fractured at the previously mentioned pressure. Final results will be used in the geomechanical modeling activities to better understand the maximum injection thresholds of the pinnacle.

During this reporting period, final planning was taking place for the acquisition of core from an acid gas disposal zone. This core will be utilized for analytical geochemical and geomechanical evaluations to better understand the effect of acid gas disposal on carbonate rocks. It is anticipated that core will be collected in early October 2008 from the Slave Point reservoir in the Zama Field. This is a dolomite and limestone gas-producing reservoir analogous to many injection targets found throughout the PCOR Partnership region.

Task 4 – Field Validation Test of North Dakota Lignite

In Task 4, the effectiveness of lignite seams to act as sinks for CO₂ during simultaneous CO₂ sequestration and enhanced coalbed methane (ECBM) production will be evaluated in the Williston Basin. The list below describes ongoing activities and accomplishments for the reporting period:

- Well development activities on all wells are nearly complete. All have been acidized and swabbed rigorously.
- Discussions are ongoing with Pinnacle and Schlumberger with regard to MMV activities. Pending equipment availability and injection schedule, it is anticipated Pinnacle will provide microseismic monitoring with tiltmeters. Schlumberger will conduct cross well seismic surveys prior to and after injection.
- Additional water samples have been taken from shallow groundwater wells in the vicinity of the project site. This activity will add to baseline data and bolster efforts to obtain an EPA aquifer exemption for the coal seam targeted for injection.
- Geophysical logs from the five test wells have been evaluated in detail to derive correlations for petrophysical properties for the numerical model of the coal seam. Field test results have been critically reviewed to provide additional input data for the numerical model.
- Reservoir simulations have been initiated and have indicated that in the absence of reservoir heterogeneity, structure has the most pronounced effect on CO₂ plume migration.
- Additional laboratory tests have been conducted for the purpose of refining the model.
- Additional gas samples from the wells have been obtained and analyzed.
- Negotiations are complete with Praxair to supply and inject CO₂ at the site. A meeting was held on-site with Praxair and research staff to discuss the time line and logistics of injection.
- Nitrogen fracture NFIT was conducted on three of the wells, the injector, and two monitoring wells. The preliminary results indicate an average reservoir pressure of $p_i = 340$ psia, which is significantly lower than the estimated hydrostatic pressure.
- A formation water sample was submitted to EPA in support of the aquifer exemption request. This is part of the UIC application for CO₂ injection.
- Presentations on the progress of the project were given at the PCOR Partnership 2008 Annual Meeting in Maple Grove, Minnesota, and at the North Dakota Association of Oil and Gas Producing Counties Annual Meeting in Minot, North Dakota.
- Well and site preparation continues in order to get ready for CO₂ injection.
- Numerous meetings have been conducted with various partners and field service providers to discuss the logistics of CO₂ injection and MMV activities.

- Downhole monitoring equipment has been received. System deployment is ongoing. The system will collect temperature, pH, conductivity, and pressure data.

Task 5 – Terrestrial Validation Test

The objective of Task 5 is to develop the technical capacity to systematically identify, develop, and apply alternate land use management practices to the prairie pothole ecosystem (at both local and regional scale) that will result in GHG reductions. Ongoing activities and accomplishments for the period are listed below:

- Progress has been made toward community, climate, and biodiversity (CCB) verification of carbon offsets from native prairie preservation. PCOR Partnership partners are developing a project description document to submit for third-party approval by the CCB Alliance.
- Satellite imagery purchased for a land use change model for the U.S. and Canadian Prairie Pothole Region (PPR) is being processed. This model will assist in carbon easement acquisition. The model will predict the probability that a parcel of land with known characteristics (e.g., soil quality, rainfall, etc.) will remain in a particular land use (e.g., row crops vs. pasture) given characteristics about each land use (e.g., commodity prices, federal subsidy payments, conservation payment rates, carbon payments, etc.).
- A comparison of soil carbon models applicable to the PCOR Partnership region continues to be performed. The models are CENTURY, DAYCENT, Comet-VR, and C-LOCK. Results are being compared with other published literature on soil carbon sequestration rates and land use/conversion rates and their applicability to different carbon standards and registries. A draft fact sheet is undergoing internal review.
- Analyses of grassland samples collected in North Dakota and Iowa continue. Approximately 90 deep cores were collected for soil characterization. The processing of these cores has been initiated and is ongoing.
- PCOR Partnership partners are working on the development of a model to evaluate carbon sequestration in wetlands. The model will be developed at the field scale with specific landowner information used to set parameters and coefficients. Work continues to progress on development of area calculations and formulas for determining land units affected by various wetland restoration actions.
- Wetland catchment GHG flux sampling occurred biweekly on the Goebel Ranch and throughout the Ipswich Grasslands areas in South Dakota during the months of July and August 2008. There were 1800 gas samples collected from 17 wetland catchments over that period of time. These samples have been sent out for analysis. Additionally, information on soil moisture, soil and water temperature, water depth, and vegetative cover type of each catchment were obtained during each sampling event. In September, all gas-sampling and soil-monitoring equipment was removed from the catchments.
- As part of the wetlands study, an in situ experiment on nitrogen amendments on GHG emissions is being conducted that will quantify changes in the global warming potential (GWP) of wetlands in the PPR “before” and “after” restoration and will examine the GWP of nitrogen fertilizers on the soil.

Task 6 – Characterization of Regional Sequestration Opportunities

The goal of Task 6 is to characterize the PCOR Partnership region with respect to regional sequestration opportunities and to provide this information to our partners through our Web-based DSS. Progress within the period included the following:

- Iowa Department of Natural Resources – Geological Survey (IGS) has completed the compilation, review, and creation of GIS files for the Ordovician and Mississippian mapping unit isopach maps. This effort included reviewing key well cutting sets, cores, geophysical logs, and tests.
- IGS completed a review of old publications and pre-WWII annual reports for information on water well production, quality, and heads for Paleozoic strata in the southwestern portion of the state.
- The IGS completed draft total dissolved solids (TDS) and potentiometric maps for Mississippian strata. Insufficient data and common dual-well completions do not allow mapping the Upper and Lower Mississippian separately for these parameters.
- IGS is continuing with the synthesis of Pennsylvanian coal strata and cumulative coal thickness, including digitizing stratigraphically key horizons.
- A major remodel of the PCOR Partnership DSS is under way.
- Review and collection of the latest oil field/pool information needed to calculate potential sequestration capacity and EOR potential are nearly complete for North Dakota.
- Updated cumulative oil, gas, and water production for the fields and pools in the states and provinces of the PCOR Partnership region, except for Alberta, is also nearly complete.

Basic stratigraphic data collection was completed for reconnaissance-level evaluation of the Mississippian Mission Canyon Formation, Ordovician Winnipeg Group, and Cambrian Deadwood Formation in the Washburn region of North Dakota. These stratigraphic horizons represent the final saline sequestration zones that will become part of the overall Washburn area study. The Washburn study area focuses on zones of porosity/permeability amenable to CO₂ sequestration. The study uses a map-based approach coupled with Monte Carlo uncertainty analysis.

Task 7 – Research Safety, Regulatory, and Permitting Issues

The goal of Task 7 is to identify and track new and existing regulations with respect to the relevant regulatory agencies within each of the PCOR Partnership states and provinces and the relevant federal regulatory agencies of the United States and Canada. Activities in Task 7 included the following:

- Development of deliverable D40, the National Environmental Policy Act (NEPA) document for the Williston Basin Validation Test, is ongoing.
- Provided additional review of WRI Guidelines for the Carbon Capture and Sequestration document.

- Continued review of EPA's Advance Notice on Proposed Rulemaking (ANPR) for regulating GHG emissions under the Clean Air Act.
- Form 4, Sundry Notice has been submitted to the North Dakota Industrial Commission (NDIC) for the Lignite Field Validation Test to document work that has been completed on State of North Dakota Well 36-16.
- Completed a review of the regulatory and economics section of the International Energy Agency's (IEA's) "Draft Aquifer Storage – Development Issues" document.
- A thorough review of EPA's proposed rules for regulating geological sequestration under the UIC program was completed. A spreadsheet that compares and contrasts the EPA-proposed rules with WRI Guidelines and IOGCC model rules was developed, and a draft of this document was provided to interested PCOR Partnership members at the annual meeting. Draft comments on EPA's proposed rules have been developed, and submitted to an ad hoc committee of PCOR Partnership members. Participated in a conference call with a task force that is working on geologic sequestration legislation for the state of North Dakota.
- Reviewed Legal Barriers to Carbon Capture Report that was completed by Alston & Bird.
- A formation water sample was submitted to the NDIC in support of the aquifer exemption request for the Lignite Field Validation Test. This is part of the UIC application for CO₂ injection.
- Various state, provincial, and regional GHG reduction and carbon capture and sequestration (CCS) initiatives are being tracked and analyzed.
- Analysis of carbon market strategies continues.
- Legislative actions occurring in Congress continue to be followed.
- Review of recent publications relating to regulating CO₂ sequestration and MMV issues continues.

Task 8 – Public Outreach and Education

The goals of the PCOR Partnership's Public Outreach and Education task are to provide 1) outreach and education mechanisms that raise the awareness of sequestration opportunities in the region and 2) outreach to interested stakeholders with information about existing and future sequestration efforts in the region.

"Out of the Air – Into the Soil: Land Practices That Reduce Atmospheric Carbon Levels" was broadcast in the PPB region on September 26, 2008; and 1000 DVDs were prepared, complete with packaging and inserts. The 30-minute documentary contains segments on forest restoration in Brazil, forest restoration in the lower Mississippi Valley, fire management in California, wetland restoration, prairie preservation, and minimum till agriculture in the northern Great Plains.

Work continued on the documentary (deliverable D46) entitled "Geologic CO₂ Sequestration." During this period arrangements for additional interviews were made, and animation needs were refined. The documentary is scheduled for DOE review by December 31, 2008. Planning continued on the final documentary due to DOE for review at the end of August

2009. The documentary will contrast and compare the implications of reducing carbon emissions for families in the United States, a developing nation, and an underdeveloped nation.

Activities were initiated on an update of the Public Outreach PowerPoint. The PowerPoint is due for DOE review by December 31, 2008. Activities were initiated on the major update of the public Web site that is due to DOE for review at the end of February 2009. The update will include a new look for the homepage, video clips, and an expanded section on sequestration tests and demonstrations.

In addition, members of the outreach team took part in the monthly conference calls and related activities of the outreach working group.

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

The goal of Task 9 is to identify sequestration technologies and approaches that are suitable and available for large-scale deployment in the PCOR Partnership region and to estimate their economic viability. Maintaining a current emission database; enhancing the ability to identify good matches between CO₂ emission sources, capture/separation technologies, and appropriate geologic sinks; and accurately estimating the costs of capture, compression, and transportation are crucial aspects to meeting this goal. During this reporting period, a draft report entitled “Phase II Best Practice Manual: Regional Sequestration Opportunities,” which addresses all of the Task 9 goals and objectives, was prepared and submitted.

The accuracy of the latitudinal and longitudinal coordinates of the locations of each CO₂ source contained in the PCOR Partnership source database was verified to the extent possible using Google Earth.

Task 10 – Regional Partnership Program Integration

Task 10 consists of the PCOR Partnership actively participating in and providing leadership to technical working groups to identify, discuss, and resolve common issues related to the deployment of sequestration technologies. The PCOR Partnership plans on attending the Southeast Regional Carbon Sequestration Partnership 4th Annual Stakeholders’ Briefing on March 3 and 4, 2009. The PCOR Partnership continued participation in working group conference calls, including the following:

- GIS
- Capture and transportation
- Geologic (the PCOR Partnership Geologic Working Group meeting was also held September 17, 2008, in Maple Grove, Minnesota)
- Outreach

Activities during this reporting period also included the following:

- The PCOR Partnership submitted a proposal to the IEA’s GHG Programme Storage Capacity Coefficients request. The proposal was chosen by IEA on July 22, 2008.

- The draft of WRI's Sequestration Guidelines was received on May 13, 2008, for review. Two rounds of comments were sent back in July.
- A poster presentation was completed for Marathon Oil. On July 22, 2008, Marathon showcased initiatives and research results that the PCOR Partnership is conducting in the Williston Basin.
- Preparations for the Regional Partnerships' Annual Review Meeting (October 6–8, 2008, in Pittsburgh, Pennsylvania) are currently under way.
 - Project fact sheets are being updated for submission by September 19, 2008.
 - Three poster boards (on the geologic sequestration projects and a summary of the terrestrial sequestration) are also being developed.
 - The PCOR Partnership will also give presentations on the following topics:
 - Williston Basin Coal Seam Injection Test (to be given on October 6, 2008)
 - Zama–Keg River Formation (to be given on October 6, 2008)
 - Overview of the PCOR Partnership (to be given on October 7, 2008)

PHASE II COST STATUS

The approved budget for Phase II, along with actual costs incurred and in-kind cost share reported, is shown in Table 3.

Table 3. Phase II Budget and Actual Costs Incurred

Organization	Approved Budget	Actual Costs Incurred
DOE Share – Cash	\$15,913,178	\$10,133,942
Nonfederal Share – Cash	\$2,321,410	\$1,420,400
Nonfederal Share – In-Kind	\$7,825,301	\$9,438,385
Total	\$26,059,889	\$20,992,727

PHASE II SCHEDULE STATUS

Table 4 contains all of the Phase II deliverables and milestones and the submission dates for this reporting period. because negotiations are ongoing and still uncertain for our partners in the Williston Basin demonstration, various deliverables and milestones have been extended and approved by DOE. See Tables 4 and 5 for a listing of all deliverables and milestones by quarter, with completion dates, for the duration of the project.

ACTUAL OR ANTICIPATED PHASE II PROBLEMS OR DELAYS

Task 1 – Project Management and Reporting

Nothing to note at this time.

Table 4. Phase II Milestones and Deliverables

Title/Description	Due Date	Actual Completion Date
Year 1 – Quarter 1 (October–December 2005)		
M1: Task 1 – Project Management Plan Completed	12/31/05	12/30/05
D1: Task 1 – Project Management Plan	12/31/05	12/30/05
D2: Task 8 – Regional CO ₂ Sequestration Potential – Field Validation Tests (Fact Sheet 6)	12/31/05	12/29/05
D5: Task 3 – Zama Field Validation Test NEPA Compliance Document	2/28/06	12/21/05
Year 1 – Quarter 2 (January–March 2006)		
D3: Task 1 – Quarterly and Earned Value Management (EVM) Report	1/31/06	1/30/06
M3: Task 3 – Zama Field Validation Test Experimental Design Package Completed	2/28/06	2/28/06
M2: Task 6 – First Regional Characterization Data Gap Assessment Completed	2/28/06	2/28/06
D4: Task 3 – Zama Field Validation Test Experimental Design Package	2/28/06	2/28/06
D6: Task 5 – Terrestrial Field Validation Test Experimental Design Package	2/28/06	2/28/06
D7: Task 5 – Terrestrial Field Validation Test NEPA Compliance Document	2/28/06	2/14/06
D8: Task 6 – First Regional Characterization Data Gap Assessment	2/28/06	2/28/06
D9: Task 8 – Outreach Action Plan – Carbon Sequestration	2/28/06	2/28/06
D10: Task 3 – Zama Field Validation Test Site Health and Safety Plan	3/31/06	3/31/06
D11: Task 3 – Zama Field Validation Test Regulatory Permitting Action Plan	3/31/06	3/28/06
D12: Task 5 – Terrestrial Field Validation Test Site Health and Safety Plan	3/31/06	2/2/06
D13: Task 5 – Terrestrial Field Validation Test Regulatory Permitting Action Plan	3/31/06	3/27/06
Year 1 – Quarter 3 (April–June 2006)		
D3: Task 1 – Quarterly and EVM Report	4/30/06	4/28/06
D14: Task 1 – Semiannual Report	4/30/06	4/28/06
D15: Task 3 – Zama Field Validation Test Outreach Action Plan	4/30/06	4/28/06
D16: Task 5 – Terrestrial Field Validation Test Outreach Action Plan	4/30/06	4/28/06
D17: Task 8 – PowerPoint Presentation: General Audience CO ₂ Sequestration Outreach	5/31/06	5/31/06
D18: Task 3 – Zama Field Validation Test Sampling Protocols	6/30/06	6/29/06
M4: Task 5 – Terrestrial Field Validation Test Sampling Protocols Completed	6/30/06	6/21/06
D19: Task 5 – Terrestrial Field Validation Test Sampling Protocols	6/30/06	6/21/06
Year 1 – Quarter 4 (July–September 2006)		
D3: Task 1 – Quarterly and EVM Report	7/31/06	7/26/06
D20: Task 8 – Zama Acid Gas Project (Fact Sheet 7)	7/31/06	7/28/06
D21: Task 10 – Regional Partnership Integration Plan	7/31/06	7/18/06
D22: Task 8 – Web Site Update	8/31/06	8/31/06

Continued...

Table 4. Phase II Milestones and Deliverables (continued)

Title/Description	Due Date	Actual Completion Date
Year 2 – Quarter 1 (October–December 2006)		
D3: Task 1 – Quarterly and EVM Report	10/31/06	10/31/06
D14: Task 1 – Semiannual Report	10/31/06	10/31/06
D23: Task 9 – Best Practice Manual: Using Wind Power to Offset the Energy Requirements of CO ₂ Compression for Sequestration	10/31/06	10/31/06
D24: Task 4 – Lignite Field Validation Test NEPA Compliance Document	10/31/06	10/13/06
D25: Task 8 – CO ₂ Sequestration Through Habitat Restoration – Defining Best Terrestrial Sequestration Practices for Landowners (Fact Sheet 8)	12/31/06	12/29/06
Year 2 – Quarter 2 (January–March 2007)		
D3: Task 1 – Quarterly and EVM Report	1/31/07	1/31/07
D17: Task 8 – PowerPoint Presentation: General Audience CO ₂ Sequestration Outreach	2/28/07	2/28/07
D26: Task 4 – Lignite Field Validation Test Experimental Design Package	2/28/07	2/28/07
M5: Task 4 – Specific Well Location at the Lignite Field Validation Test Identified	2/28/07	2/28/07
M6: Task 4 – Finalized Drilling Prognosis for the Five-Spot Research Wells for the Lignite Field Validation Test	3/30/07	3/30/07
D27: Task 4 – Lignite Field Validation Test Site Health and Safety Plan	3/30/07	3/29/07
D28: Task 4 – Lignite Field Validation Test Regulatory Permitting Action Plan	3/30/07	3/30/07
Year 2 – Quarter 3 (April–June 2007)		
D3: Task 1 – Quarterly and EVM Report	4/31/07	4/25/07
D14: Task 1 – Semiannual Report	4/30/07	4/30/07
D29: Task 4 – Lignite Field Validation Test Outreach Action Plan	4/30/07	4/27/07
D30: Task 8 – Outreach Booth	4/30/07	4/30/07
D31: Task 8 – CO ₂ Sequestration Validation Test in a Deep, Unminable Lignite Seam in Western North Dakota (Fact Sheet 10)	5/31/07	5/31/07
D32: Task 4 – Lignite Field Validation Test Sampling Protocols	6/29/07	6/29/07
D33: Task 6 – Denver–Julesberg Basin EOR Potential Report	6/29/07	4/30/07
Year 2 – Quarter 4 (July–September 2007)		
D3: Task 1 – Quarterly and EVM Report	7/31/07	7/25/07
D34: Task 1 – Phase II Continuation Application/Progress Report	7/31/07	7/31/07
M7: Task 4 – White Paper on CO ₂ Flood Design for Simultaneous Evaluation of Carbon Sequestration and ECBM Recovery – Lignite Field Validation Test Site Completed	7/31/07	7/16/07

Continued...

Table 4. Phase II Milestones and Deliverables (continued)

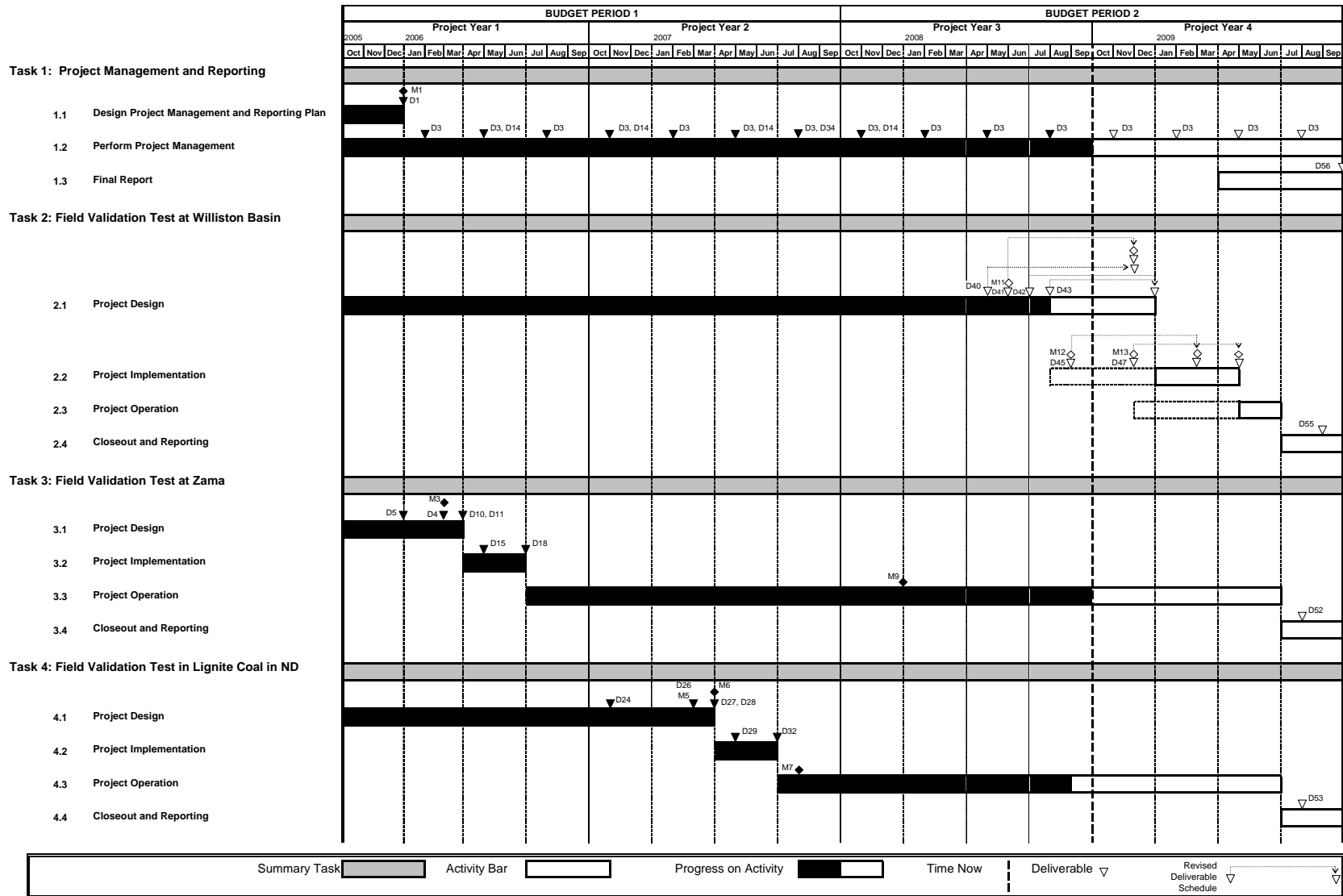
Title/Description	Due Date	Actual Completion Date
Year 2 – Quarter 4 (July–September 2007), continued		
D22: Task 8 – Web Site Update	8/31/07	8/31/07
M8: Task 5 – Best Management Practices for Terrestrial Carbon Sequestration on Private Lands in the Prairie Pothole Region (Fact Sheet 11) Completed	9/30/07	9/28/07
D35: Task 8 – Documentary: Carbon Trading	9/30/07	9/28/07
Year 3 – Quarter 1 (October–December 2007)		
D3: Task 1 – Quarterly Report	10/31/07	10/31/07
D14: Task 1 – Semiannual Report	10/31/07	10/31/07
D36: Task 6 – Regional Characterization Data Gap Assessment Update	10/31/07	10/31/07
D37: Task 8 – CO ₂ Sequestration Validation Test in a Deep Oil Field in the Williston Basin (Fact Sheet 12)	10/31/07	10/30/07
D38: Task 9 – Best Practice Manual: Excelsior Energy	11/30/07	11/30/07
M9: Task 3 – Progress of Geomechanical Evaluation Reported	12/31/07	12/28/07
Year 3 – Quarter 2 (January–March 2008)		
D3: Task 1 – Quarterly Report	1/31/08	1/31/08
D22: Task 8 – Web Site Update	3/31/08	3/31/08
Year 3 – Quarter 3 (April–June 2008)		
D3: Task 1 – Quarterly Report	4/30/08	4/30/08
D39: Task 8 – Documentary: Terrestrial CO ₂ Sequestration	4/30/08	4/30/08
M10: Task 8 – Documentary: Terrestrial CO ₂ Sequestration Reported	4/30/08	4/30/08
D17: Task 8 – PowerPoint Presentation: General Audience CO ₂ Sequestration Outreach	5/30/08	5/30/08
Year 3 – Quarter 4 (July–September 2008)		
D3: Task 1 – Quarterly Report	7/31/08	7/31/08
D44: Task 9 – Best Practice Manual: Regional Sequestration Opportunities	7/31/08	7/31/08
Year 4 – Quarter 1 (October–December 2008)		
D3: Task 1 – Quarterly Report	10/31/08	
D40: Task 2 – Williston Basin Field Validation Test Regulatory Permitting Action Plan	11/28/08	
D41: Task 2 – Williston Basin Field Validation Test NEPA Compliance Document	11/28/08	
M11: Task 2 – Williston Basin Field Validation Test NEPA Compliance Document	11/28/08	
D42: Task 2 – Williston Basin Field Validation Test Experimental Design Package	12/31/08	
D43: Task 2 – Williston Basin Field Validation Test Site Health and Safety Plan	12/31/08	
D46: Task 8 – Documentary: Geologic Sequestration	12/31/08	
D17: Task 8 – PowerPoint Presentation: General Audience CO ₂ Sequestration Outreach	12/31/08	

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Table 4. Phase II Milestones and Deliverables (continued)

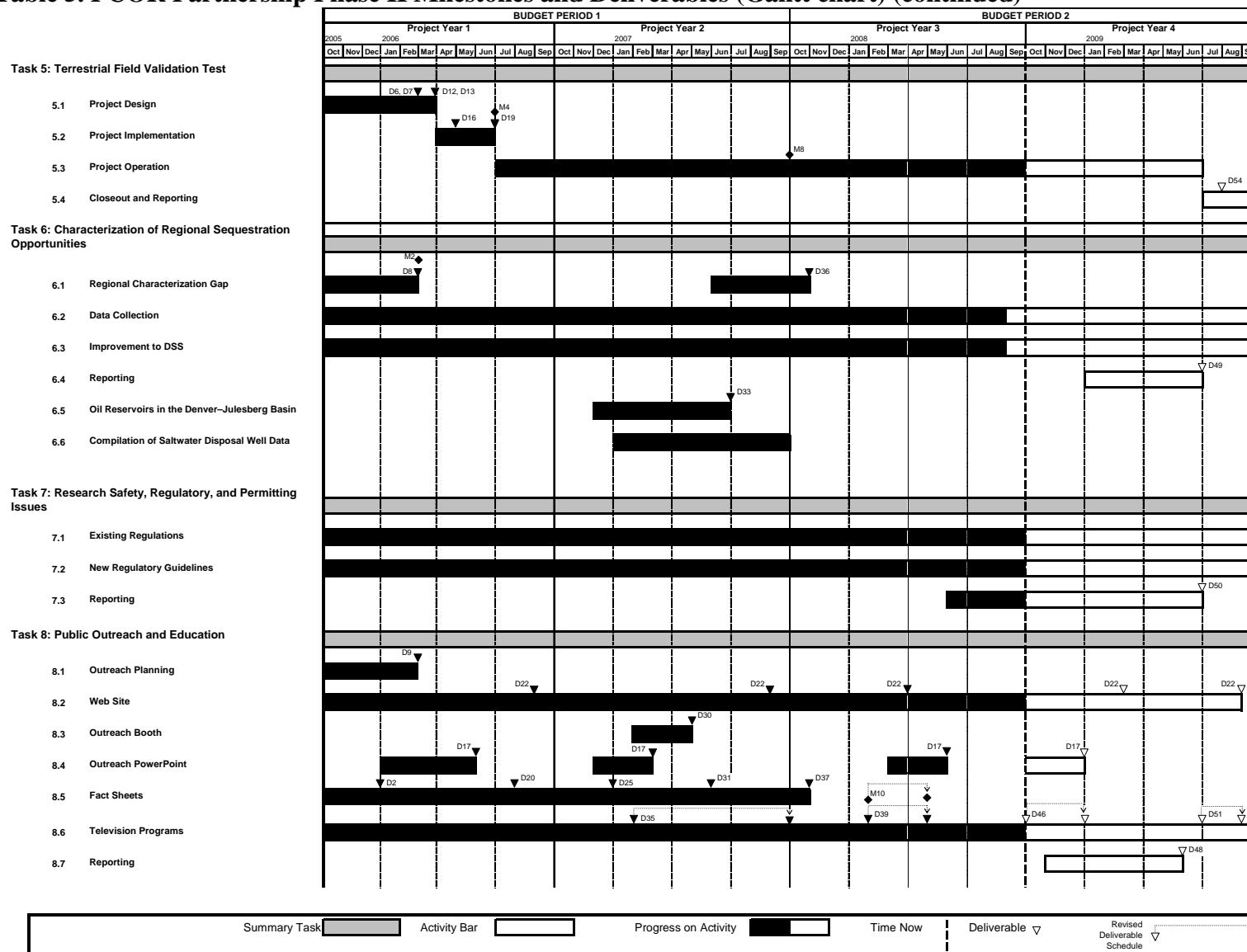
Title/Description	Due Date	Actual Completion Date
Year 4 – Quarter 2 (January–March 2009)		
D3: Task 1 – Quarterly Report	1/31/09	
M12: Task 2 – Williston Basin Field Validation Test Outreach Action Plan	2/27/09	
D45: Task 2 – Williston Basin Field Validation Test Outreach Action Plan	2/27/09	
D22: Task 8 – Web Site Update	2/27/09	
Year 4 – Quarter 3 (April–June 2009)		
D3: Task 1 – Quarterly Report	4/29/09	
D47: Task 2 – Williston Basin Field Validation Test Sampling Protocols	4/29/09	
M13: Task 2 – Williston Basin Field Validation Test Sampling Protocols Completed	4/29/09	
D48: Task 8 – Best Practices Manual: Outreach	5/31/09	
D49: Task 6 – Regional Atlas	6/30/09	
D50: Task 7 – Roadmap Document	6/30/09	
Year 4 – Quarter 4 (July–September 2009)		
D3: Task 1 – Quarterly Report	7/31/09	
D52: Task 3 – Zama Field Validation Test Regional Technology Implementation Plan	7/31/09	
D53: Task 4 – Lignite Field Validation Test Regional Technology Implementation Plan	7/31/09	
D54: Task 5 – Terrestrial Field Validation Test Regional Technology Implementation Plan	7/31/09	
D51: Task 8 – Documentary: CO ₂ Sequestration and Global Warming – Overview of Phase II Results for Regional Partnership	8/31/09	
D22: Task 8 – Web Site Update	8/31/09	
D55: Task 2 – Williston Basin Field Validation Test Regional Tech. Implementation Plan	8/31/09	
D56: Task 1 – Phase II Final Report	9/30/09	
D3: Task 1 – Quarterly Report	10/31/09	

Table 5. PCOR Partnership Phase II Milestones and Deliverables (Gantt chart)



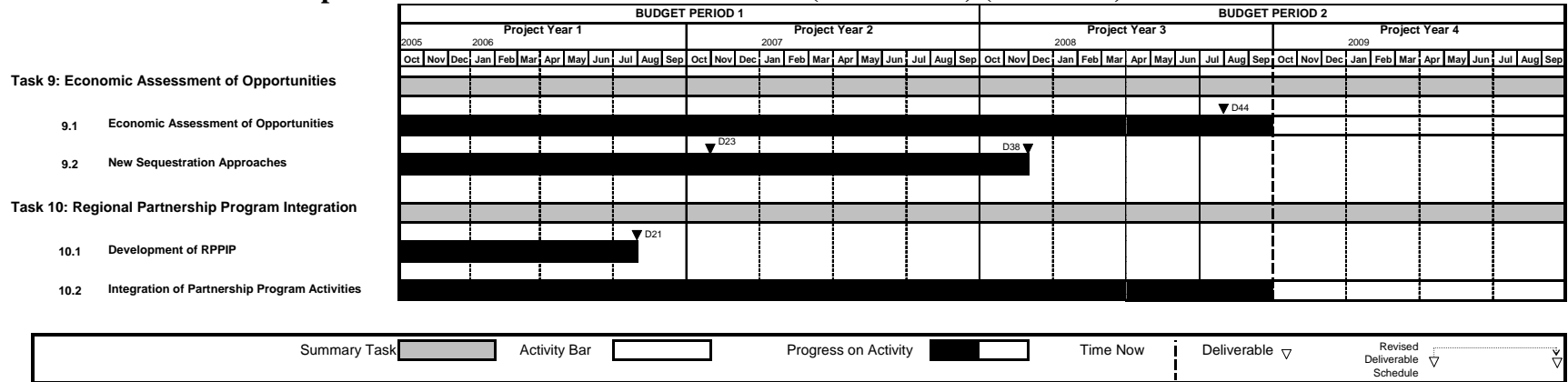
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Table 5. PCOR Partnership Phase II Milestones and Deliverables (Gantt chart) (continued)



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Table 5. PCOR Partnership Phase II Milestones and Deliverables (Gantt chart) (continued)



Key for Phase II Deliverables ▼		Key for Phase II Milestones ◆
D1 Project Management Plan	D30 Outreach Booth	M1 Project Management Plan Completed
D2 Fact Sheet 6 – Regional CO ₂ Sequestration Potential – Field Validation Tests	D31 Fact Sheet 10 – CO ₂ Sequestration Validation Test in a Deep, Unminable Lignite Seam in Western North Dakota	M2 Regional Characterization Data Gap Assessment Completed
D3 Quarterly Progress Reports	D32 Lignite Field Validation Test Site – Sampling Protocols	M3 Zama Field Validation Test Site – Experimental Design Package Completed
D4 Zama Field Validation Test Site – Experimental Design Package	D33 Denver–Julesburg Basin EOR Potential Report	M4 Terrestrial Field Validation Test Site – Sampling Protocol Completed
D5 Zama Field Validation Test Site – NEPA Compliance Document	D34 Continuation Application	M5 Identification of Specific Well Location at the Lignite Field Validation Test
D6 Terrestrial Field Validation Test Site – Experimental Design Package	D35 Video 1 – Carbon Trading	M6 Finalized Drilling Prognosis for the Five-spot Research Wells for the Lignite Field Validation Test
D7 Terrestrial Field Validation Test Site – NEPA Compliance Document	D36 Regional Characterization Data Gap Assessment Update	M7 White Paper on CO ₂ Flood Design for CO ₂ Sequestration and ECBM Recovery Completed
D8 Regional Characterization Data Gap Assessment	D37 Fact Sheet 12 – CO ₂ Sequestration Validation Test in a Deep Oil Field in the Williston Basin	M8 Fact Sheet 11 – Best Management Practices for Terrestrial Carbon Sequestration on Private Lands in the Prairie Pothole Region
D9 Outreach Action Plan – Carbon Sequestration	D38 Best Practices Manual – Excelsior Energy	M9 Progress of Geomechanical Evaluation Reported
D10 Zama Field Validation Test Site – Site Health & Safety Plan	D39 Video 2 – Terrestrial CO ₂ Sequestration	M10 Video 2 Completed – Terrestrial CO ₂ Sequestration
D11 Zama Field Validation Test Site - Regulatory Permitting Action Plan	D40 Williston Basin Field Validation Test Site – Regulatory Permitting Action Plan	M11 Williston Basin Field Validation Test Site – NEPA Compliance Document Completed
D12 Terrestrial Field Validation Test Site – Site Health & Safety Plan	D41 Williston Basin Field Validation Test Site – NEPA Compliance Document	M12 Williston Basin Field Validation Test Site – Outreach Action Plan Completed
D13 Terrestrial Field Validation Test Site - Regulatory Permitting Action Plan	D42 Williston Basin Field Validation Test Site – Experimental Design Package	M13 Williston Basin Field Validation Test Site – Sampling Protocol Completed
D14 Semiannual Progress Report	D43 Williston Basin Field Validation Test Site – Site Health & Safety Plan	
D15 Zama Field Validation Test Site – Outreach Action Plan	D44 Best Practices Manual – Regional Sequestration Opportunities	
D16 Terrestrial Field Validation Test Site – Outreach Action Plan	D45 Williston Basin Field Validation Test Site – Outreach Action Plan	
D17 PowerPoint Presentation: General Audience CO ₂ Sequestration Outreach	D46 Video 3 – Geologic Sequestration	
D18 Zama Field Validation Test Site – Sampling Protocols	D47 Williston Basin Field Validation Test Site – Sampling Protocols	
D19 Terrestrial Field Validation Test Site – Sampling Protocols	D48 Best Practices Manual – Outreach and Education	
D20 Fact Sheet 7 – Zama Acid Gas Project	D49 Regional Atlas	
D21 Regional Partnership Program Integration Plan	D50 Road Map Document	
D22 Web Site Update	D51 Video 4 – CO ₂ Sequestration and Global Warming	
D23 Best Practices Manual – Using Wind Power to Offset the Energy Requirements of CO ₂ Compression for Sequestration	D52 Zama Field Validation Test Site – Regional Technology Implementation Plan	
D24 Lignite Field Validation Test Site – NEPA Compliance Document	D53 Lignite Field Validation Test Site – Regional Technology Implementation Plan	
D25 Fact Sheet 8 – CO ₂ Sequestration through Habitat Restoration	D54 Terrestrial Field Validation Test Site – Regional Technology Implementation Plan	
D26 Lignite Field Validation Test Site – Experimental Design Package	D55 Williston Basin Field Validation Test Site – Regional Technology Implementation Plan	
D27 Lignite Field Validation Test Site – Site Health & Safety Plan	D56 Final Report	
D28 Lignite Field Validation Test Site – Regulatory Permitting Action Plan		
D29 Lignite Field Validation Test Site – Outreach Action Plan		

Task 2 – Field Validation Test – Williston Basin Oil Field, North Dakota

Efforts are under way to work with Encore Acquisition Company to conduct an injection project that would effectively replace the previously planned activities at the Beaver Lodge oil field. Other oil companies operating in North Dakota have also been contacted, and discussions regarding their ability to host the Phase II Williston Basin demonstration have been initiated. Efforts are focused on working with Encore and other oil companies to identify a site or sites where the injection project could be conducted.

Delays have also occurred with respect to some of the laboratory tests focused on injecting CO₂ at reservoir conditions into core plugs and testing the geochemical and geomechanical properties of the core plugs before and after injection. These tests were initiated during the first quarter of 2008, and results were anticipated in the late summer of 2008. However, problems with equipment over the summer resulted in delays of the laboratory work, and final results are now expected to be available in December 2008.

Task 3 – Field Validation Test at Zama, Alberta

Nothing to note at this time.

Task 4 – Field Validation Test of North Dakota Lignite

Injection activities are on hold for the lignite field validation test pending EPA approval of the PCOR Partnership's aquifer exemption request.

Task 5 – Terrestrial Validation Test

Nothing to note at this time.

Task 6 – Characterization of Regional Sequestration Opportunities

The conversion effort of the interactive GIS portion of the DSS to a .NET-based framework has been on hold pending the acquisition of the necessary software. The software was finally secured in late September; thus this activity can begin in earnest.

Task 7 – Research Safety, Regulatory, and Permitting Issues

Injection activities are on hold for the lignite field validation test pending EPA approval of the PCOR Partnership's aquifer exemption request.

Task 8 – Public Outreach and Education

Difficulty was encountered in scheduling interviews and filming locations. As a result, the remainder of the interviews and location work will be scheduled for the late fall for the "Geologic Sequestration" documentary (deliverable D46).

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

Nothing to note at this time.

Task 10 – Regional Partnership Program Integration

Nothing to note at this time.

PHASE II PRODUCTS OR TECHNOLOGY TRANSFER ACTIVITIES

Task 1 – Project Management and Reporting

A number of publications, papers, and public releases were submitted during this reporting period. See the Meetings/Travel section for a complete listing of presentations given to research stakeholders and technology users. Further information on activities and progress on these can be found in their respective sections within this report.

The deliverable entitled “D3: Task 1 – Quarterly Progress Report/Milestone Quarterly Report” was submitted to DOE for approval on June 30, 2008.

Task 2 – Field Validation Test – Williston Basin Oil Field, North Dakota

A report entitled “Utilization of Geologic Media for the Purpose of Monetizing Geologic Sequestration Credits” has been submitted as an American Association of Petroleum Geologists (AAPG) paper and is scheduled to be published in the fourth quarter of 2008. Once the report is published, it will also be included as a PCOR Partnership Phase II value-added topical report.

Task 3 – Field Validation Test at Zama, Alberta

A presentation on the Zama project was given at the PCOR Partnership Annual meeting in September.

Task 4 – Field Validation Test of North Dakota Lignite

Presentations on the progress of the project were given at the PCOR Partnership 2008 Annual Meeting in Maple Grove, Minnesota, and at the North Dakota Association of Oil and Gas-Producing Counties Annual Meeting in Minot, North Dakota.

Task 5 – Terrestrial Validation Test

PCOR Partnership partners presented a paper at the Association of State Wetland Managers meeting in Portland, Oregon, on September 16. The paper covered information on carbon sequestration and market potential for wetlands, entitled “Technical, Regulatory, and Economic Feasibility of Wetlands as a Greenhouse Gas Mitigation Strategy.” The presentation

featured results of the PCOR Partnership field test sites and a comparison of other wetland sequestration rates and references available to date. This paper will be submitted for peer review to either the *Journal of Environmental Management* or *Wetlands (Society of Wetland Scientists Journal)* early next year. The paper reviews the existing carbon market rules and project methods for terrestrial carbon offsets and relates these to wetland management and sequestration characteristics.

PCOR Partnership partners continue to market carbon offsets to potential investors and will develop a communications and marketing strategy related to a new campaign “Rescue the Duck Factory” that will include promoting PCOR Partnership region grassland carbon offset opportunities to corporations and business partners.

Task 6 – Characterization of Regional Sequestration Opportunities

The third PCOR Partnership geology work group meeting was held in September in conjunction with the PCOR Partnership 2008 Annual Meeting. The meeting was an opportunity for EERC researchers and PCOR Partnership subcontractors working on geologic sequestration assessments to share recent findings with other geologists and geologic and petroleum engineers.

Task 7 – Research Safety, Regulatory, and Permitting Issues

A spreadsheet that compares and contrasts the EPA-proposed rules for geologic sequestration with WRI Guidelines and IOGCC model rules was developed, and a draft of this document was provided to interested PCOR Partnership members at the annual meeting. Draft comments on EPA’s proposed rules have been developed and submitted to an ad hoc committee of PCOR Partnership members.

Task 8 – Public Outreach and Education

A presentation on the task activities was given at the PCOR Partnership 2008 Annual Meeting in September.

Task 9 – Identification of the Commercially Available Sequestration Technologies Ready for Large-Scale Deployment

The deliverable D44 draft report “Phase II Best Practice Manual: Regional Sequestration Opportunities” was prepared and submitted to DOE for approval on July 31, 2008.

Task 10 – Regional Partnership Program Integration

See the Accomplishments Section of this report for a complete listing of the topics of presentations given by the PCOR Partnership.

MEETINGS/TRAVEL

Representatives from the PCOR Partnership participated in and/or presented at the following meetings and conferences in this reporting period:

- June 29 – July 2, 2008: 4th International Symposium on Energy, Informatics, and Cybernetics: EIC '08 in Orlando, Florida
- July 7–11, 2008: Meeting with partners to discuss Phase III demonstration and Zama project in Calgary, Alberta
- July 8–11, 2008: Computer Modeling Group Ltd. Technical Symposium in Calgary, Alberta
- August 5, 2008: Project meeting with Praxair in Minot, North Dakota
- August 5–8, 2008: Meeting with partners to discuss the Fort Nelson and Zama Projects in Calgary, Alberta
- August 13–15, 2008: Coal-Gen in Louisville, Kentucky
- August 25–28, 2008: Power Plant Air Pollutant Control “Mega” Symposium in Baltimore, Maryland
- September 16–18, 2008: PCOR Partnership Annual Meeting in Maple Grove, Minnesota
- September 24, 2008: UIC and CO₂ Geosequestration Seminar, Cincinnati, Ohio
- September 25, 2008: Presented to the North Dakota Association of Oil and Gas Producing Counties Annual Meeting in Minot, North Dakota
- September 30, 2008: Attended EPA public meeting on proposed rules for geologic sequestration in Chicago, Illinois
- September 29 – October 2, 2008: Pittsburgh Coal Conference in Pittsburgh, Pennsylvania

Materials presented at these meetings are available to partners on the PCOR Partnership DSS Web site (<http://gis.undeerc.org/website/pcorp/>).

REFERENCES

None.